Is TELEVISION Ready?

The Debate-of-the-Month

Photo: General Electric Co.

ANTICIPATION: These eager youngsters are watching a puppet show being televised at a WRGB party.

YES!

Says Allen B. DuMont

TELEVISION has travelled an amazing, gruelling distance since it first took form in the laboratories. Already its 525-line transmission gives it a degree of technical excellence far transcending that attained by any other invention of comparable importance before it was given to the public.

Today's broadcast television picture is sent by transmitters and seen on receivers built before the war. They have stood up well, but they do not represent the most advanced stages of television available any more than the automobiles in use today incorporate the latest developments in transportation.

In the laboratory we have tested cameras, transmitters, lights, and receiving equipment which give pictures of subtle gradation even when modest amounts of light are used. They are better in quality than our finest 16-millimeter movies and very nearly as good as the 35-millimeters.

This equipment now exists. It operates in a portion of the radio spectrum we have explored and mastered. Some of it is withheld from the public for reasons of military security, lack of manpower or materials for production, and/or because—at this writing, at least—we are not certain that we can offer it to the public with any assurance that television will have tenancy of a fixed position on the dial long enough for consumers to secure full value from their investments in receivers.

This equipment has been labora-

tory tested. It is ready—ready for production when manufacturers have finished wartime jobs.

Technicians skilled in radar manufacture and operation will be released from war plants and the armed forces. Many tens of thousands of jobs will be needed by these workers. Economists and major manufacturers have termed television the next billion-dollar industry. They envision it employing factory workers, salespeople, entertainers, repair and maintenance workers, engineers, artists, producers of raw material, and myriad other main-line and tributary workers.

If the advocates of deferred television were to have their way, these workers would be unable to find jobs in television for an indefinite period of time. Whether or not they could find jobs elsewhere is questionable.

One reason given for restraining commercial development of television is that we are on the eve of revolutionary technical discoveries which would quickly outmode present equipment. It has been said, for example, that despite Nazi occupation of their country, French scientists had probed the mysteries of the radio spectrum above 300 megacycles for television. But investigation has proved the rumor to be unfounded.

We have no assurance that high-frequency television *ever* will be satisfactory. Experiments made point to difficulties for which no solutions are now in sight. In New York, for example, only 15 percent of the people between a transmitter and the horizon could be reached by a very high frequency signal of sufficient strength to get satisfactory reception. Engineers know no way to overcome the enfeebling of signals —a "shadow effect"—created by buildings, bridges, hills, and other obstacles.

Bachrach

DR. DU MONT . . President of the Allen B. DuMont Laboratories, Inc.; past president of Television Broadcasters Association. He is a member of the Rotary Club of Montclair, N. J.

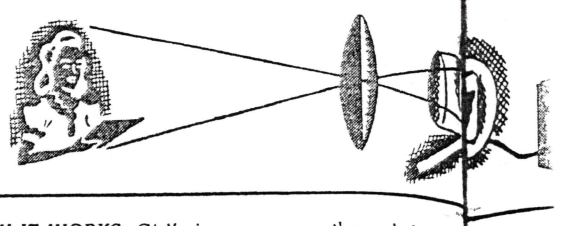
No television transmitter has yet been built which will operate in the vast, unexplored portions of the radio spectrum. When such a transmitter is built, it will still be necessary to seek out the impediments to clear signals and to combat them. New cameras and receivers will have to be designed and built, then be subjected to a gantlet of tests for quality, operational efficiency, and longevity in order to protect the public.

Even were it possible to create this equipment within a year or a very few years, our moral responsibility to consumers would require us to maintain it on an experimental basis until as fully tested and mastered as is our present most advanced equipment operating in the channels now assigned to television. Very probably such a process would require at least five to ten years.

Meanwhile we could have no commercialization of television. Years of programming experience and of bringing knowledge, cultural advantages, entertainment, and immediate news reports to substantial portions of the public would be irretrievably lost. Revenue which could be plowed back into extensive and expensive experimentation in electronic transmission would not be forthcoming from television for years. And the portion of the spectrum in which we *know* television can operate efficiently and successfully would be — in fact, has already been — placed in jeopardy of being lost to television.

Those of us who have watched television develop from an embryonic state have almost become conditioned to accepting scientific miracles as platitudes. But science is conservative. Science seeks checked, tested, verified, and corroborated facts, not just intelligent conjecture, before it pulls the switch that lets industry crescendo experiments into commercial enterprises.

For that reason, most television proponents believe it must develop commercially in essentially the channels now assigned to it. Meanwhile, all major organizations in television - equipment production would continue to explore the very high frequency waves in the hopes that it will not be too many years before parallel television broadcasting can be conducted in that roomier segment of the ether. Then, just as we are now witnes-



HOW IT WORKS: Girl's image passes through lens to

Facts for the Layman

AT THE outbreak of World War II, approximately 10,000 television receivers had been placed on the market in the United States and nine television stations were in operation. About 5,000 receivers were concentrated in the New York area, most of the rest being around Los Angeles, Chicago, Philadelphia, and Schenectady.

All nine stations have continued to operate, most of them broadcasting three to four hours an evening two or three evenings a week. About 85 percent of the receivers still operate satisfactorily. Resale prices for these have increased from a low of $70 for those with 12-inch tubes to about $300.

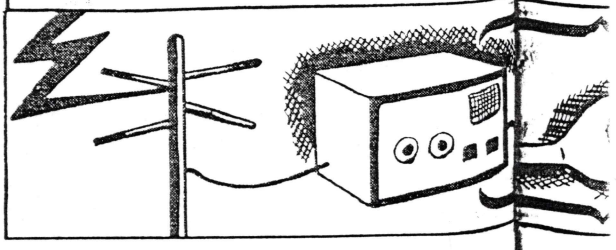
Programs are, for the most part, produced with modest budgets. All stations fill in part of their air time with movies; some operate entirely without live-model broadcasts. Remote pickups are largely of sporting events. Studio productions are variety shows; television versions of radio broadcasts, debates, and other efforts to achieve spontaneity; dramatic presentations using few characters and operating largely in close-ups; newscasts employing maps, charts, etc.

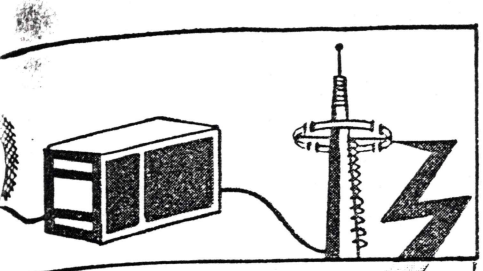
Studios also cover news events such as elections, nominating conventions (either locally or with special films), and war-bond programs. During the war they've used their facilities for training civilian-defense workers and war-bond salespeople.

These programs are telecast to receivers scattered within approximately 50 miles of the transmitters, although oftentimes reception has been found satisfactory considerably beyond this distance. Philco, General Electric, and the National Broadcasting Company have established a test network which permits the longest-range television broadcasting. The American Telephone & Telegraph Company has announced plans for a 6,000- to 7,000-mile coaxial cable network which will lace the principal metropolitan areas of the country together into a vast television network. It has indicated a year-by-year development program aiming at completion of the network in 1950.

The Federal Communications Commission (FCC) has received almost 100 applications for additional television stations, largely from radio broadcasters, newspaper and magazine publishers, electronic manufacturers, and department stores. Virtually no con-

RADIO signals caught by aerial reverse





e in tube, is "scanned," broadcast—

bout U.S. Television

truction work is expected on even those hich have already been approved by the CC before the end of the war.

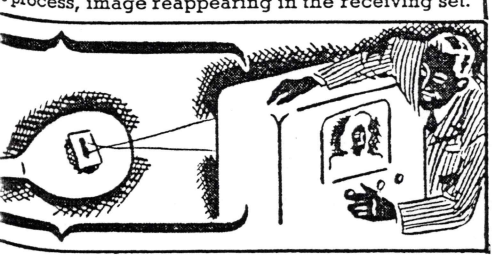
Military developments have been credited ith advancing television considerably. Not- ble among these is radar, which shares many perational principles with television. Dur- ng the war some of the laboratories have ontinued developmental work on television. adio Corporation of America recently in- roduced a receiver in New York which pro- cted an image from a small receiving tube hrough the back of a large translucent creen, in answer to objections to the small nages on prewar television receivers.

Principles of television broadcast remain he same, however. In the television camera, lens focuses the image before the camera n a mosaic composed of tiny, individual hotoelectric cells which store light. The righter the light hitting the individual cell, he greater the charge stored in it. A dim ight generates a weak charge. An electron un sweeps a beam of electrons back and orth over this mosaic, dropping a fraction f an inch with each horizontal stroke until t reaches the bottom of the mosaic, at which oint it leaps to the top and repeats.

Each time the electron beam strikes a cell, t knocks the electrical charge out against a inc plate behind the mosaic. The plate con- ucts these tiny electrical charges, in orderly rocession, to an amplifier and thence to the ransmitter which sends them out through he ether. The television receiver antenna in- ercepts them, conducts them down to the eceiver tube, and there they are hurled gainst the fluorescent screen on the front of the tube in the same order in which they were picked up. Strong impulses strike the screen with enough power to create bright dots. Weak ones leave their portion of the screen dark. Thus the image is recreated on the receiver.

This process is conducted at an extremely rapid rate. Each complete frame is composed of 525 horizontal lines. Thirty complete frames are transmitted by television each second. Columbia Broadcasting System has announced plans for a transmitter which will operate with 735 lines, 30 frames a second, in black and white and 525-line color.

e process, image reappearing in the receiving set.



sing the transition between amplitude modulation radios (the type most people now have in their homes) to the more tonally discriminating frequency-modulation (F-M) radios, we can gradually taper off from the current television channels to the very high frequency channels if the numerous obstacles to this use should be overcome. The tapering period can be extended sufficiently so that the public derives a fair amount of value from its initial television-receiver purchases before the easy, low-slope transition takes place.

This will entail considerable sacrifice on the part of the manufacturers. Their already gigantic investments in television will be materially increased and then, eventually, written off the books as very high frequency television is perfected. Manufacturers, however, frankly question the optimistic estimates about the speed and engineering ease with which the unexplored channels can be developed. They feel the exploration will require many years.

Postwar television, as it is conceived by those seeking an early "green light" is far from identical with prewar television. The number of "dots" or picture elements that go on the screen has been used as the major criterion of picture quality. Yet, at the angle that the eye subtends in viewing a television screen in the home, postwar television images *which have already been thoroughly tested* will be of much finer gradation than were prewar ones. Better transmitters and better receivers have been perfected. The resultant degree of improvement which will accrue to television immediately upon resumption of production will be equivalent to images employing approximately twice as many picture elements, as far as the human eye viewing the screen from a normal distance is concerned.

Why, then, wait? Certainly not for color television. What would have happened if we had postponed development of the whole moving-picture industry until color arrived?

Today we have quality pictures; eager sponsors; a priceless, pretrained labor potential; a portion of the spectrum that is television's by prior claim and exhaustive exploration; large-screen receivers; a long list of potential broadcasters waiting to build stations; and all the engineering and programming knowledge necessary to give television a flying start.

Television is ready!

no!

Says Joseph H. Ream

REAM . . .Lawyer. Vice-president and secretary in charge of television of the Columbia Broadcasting System. Graduate, "U" of Kansas and Yale. Lives on his farm in Millstone, N. J.

TO ANSWER the question "Is television ready?" I think I should begin by asking, "Ready for what?"

Television is already here and, we hope, here to stay. Television has been with us for years; longer, I think than most people realize. Before the war, and in cities where television stations were located, it was possible to buy a television set, have it installed in a home—sometimes as far as 30 or 40 miles from the transmitter—and get television reception.

Although the war put a stop to the manufacture and sale of television sets, visual programs are still being broadcast for the benefit of prewar set owners. In New York, for example, one of three television stations is on the air each evening, a total for the three stations of about 14 hours each week.

Time devoted to television broadcasting will undoubtedly be increased after the war. After the war, also, manufacturers plan to put new sets on the market. They will be better sets than any previously offered, though how much better is still not known.

To the extent of these facts, television may be said to be "ready."

Why, then, am I taking the negative side of this debate? Because I very much doubt that the public is ready for the kind of television now ready for it. Because, at its present level of quality, I very much doubt that television can develop into a prosperous new in-